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TITLE: (6) Experimental production of pure synthetic minerals in a solar furnace and their characteristic features

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TEXT: The experimental solar furnace, erected by the (Slovenian) Metallurgical Institute of Ljubljana at Piran in 1960, is described in detail. Local conditions permit temperatures of about 2500°C to be attained during 150 sunny days every year, and up to 2800 - 2900°C on some days in May - July. The heliostat has an automatic motion controlled by photo-transistors and a hydraulic driving mechanism. Usual porcelain crucibles can be used since the mixture is fused only in the center of the top layer. The minerals were obtained from two or three of the following oxides: CaO, MgO, Al_2O_3, SiO_2. About 0.5% of carbon black was added to the oxide mixture in order to facilitate the fusion. The following minerals were synthesized: dolomite, corundum, spinel, anorthite, cordierite,

wollastonite, grossularite, helenite, akermanite, forsterite, monticellite, shannonite, merwinite, mullite, clinoenstatite and diopside. The quality of ten of these 16 minerals was excellent. The identification was carried out by the Debye-Scherrer method and by means of X-ray diffractograms (Philips diffractometer PW 1051). There are 10 figures and 1 table.

ASSOCIATION: Metalurški institut u Ljubljani (Metallurgical Institute of Ljubljana)

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